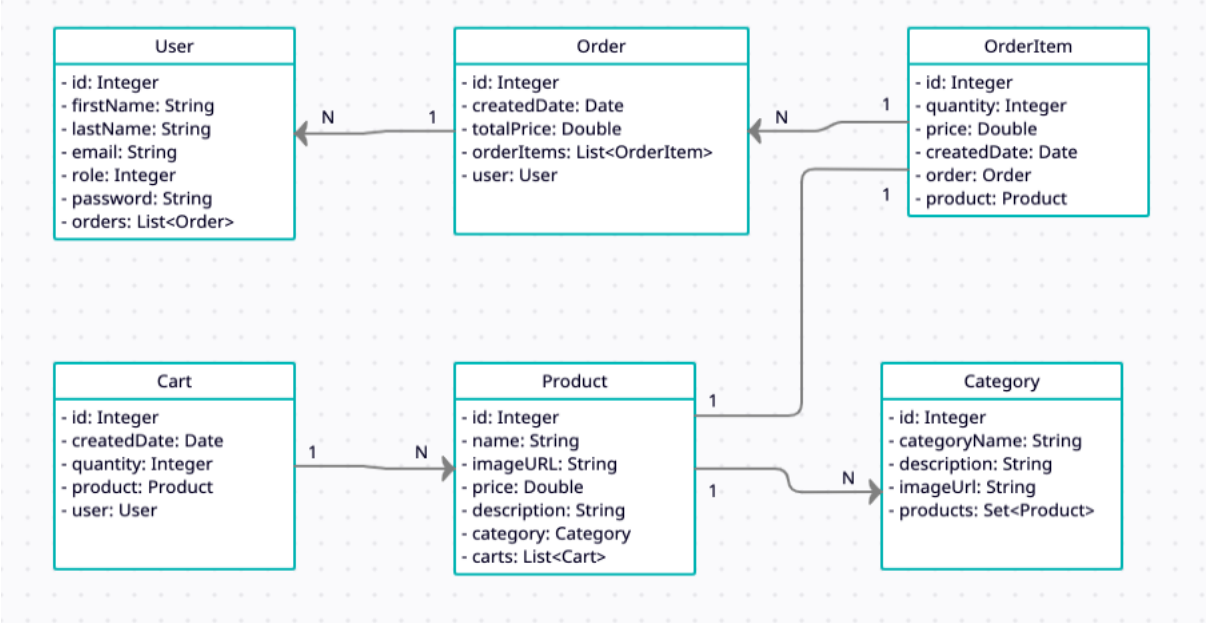
1. Data Models - We have the following data models in this application.
    a. User - To store different users in this application. One-To-Many relationship with Order
    b. Order - To store order information in this application. One-To-Many relationship with OrderItem.
    c. OrderItem - In a single Order, there will be multiple OrderItem and in a single OrderItem there will be a single product with their quantity. Many-To-One relationship with Order and One-To-One relationship with Product.
    d. Category - To store different categories in the application. One-To-Many relationship with Product.
    e. Product - To store Products in this application. One-To-One relationship with OrderItem, One-To-Many relationship with Category and Many-To-One relationship with Cart.
    f. Cart - To store cart related information in this application. One-To-Many relationship with Product.



2. We have the following controllers in this application. Controllers talk to Services which talk to Repositories. Repositories are nothing but interfaces created using JPARepository which will have all default methods like save, find to perform CRUD operations on the data models we have created.
    a. UserController - To perform all operations related to the User data model. In this controller we have methods like
        i. getUsers - To fetch a list of available users.
        ii. createUser - To create a new user.
    b. CategoryController - To perform all operations related to the Category data model. In this controller we have methods like
        i. getCategories - To fetch a list of available categories.
        ii. createCategory - To create a new category.
        iii. updateCategory - To update an existing category.

c. ProductController - To perform all operations related to the Product data model. In this controller we have methods like
    i. getProducts - To fetch a list of all available products.
    ii. addProduct -To create a new Product.
    iii. updateProduct - To update existing products.
d. CartController - To perform all operations related to the Cart data model. In this controller we have methods like
    i. addToCart - To add a product to cart
    ii. getCartItems - To get cart details like which all products are added to cart, their quantity, total cost etc.
    iii. updateCart - To update an existing cart.
    iv. deleteCartItem - To delete cart.
e. OrderController - To perform all operations related to the Cart data model. In this controller we have methods like
    i. placeOrder - To place an order after payment which will create an entry in the Order data model and clear cart.
    ii. getAllOrders - To get details of all the orders the user has placed.
    iii. getOrder - To get details of a single order by id placed by the user.

3. Architecture - Architecture for this application is very simple as it's a demo application. We have total 3 layers which are
    a. Controllers
    b. Services
    c. Repositories
4. For simplicity, I have used an in memory h2 database which can be replaced with any other database if required.